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| EXAMINER | |
|---|---|
| LEE, DAVID J | |

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DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/653,525 | ISLAM, MOHAMMED N. | |
| | Examiner | Art Unit | |
| | David Lee | 2633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/2/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 24-26, 41, and 44-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24 recites the limitation "the identifier" in lines 2-3 of claim 24. There is insufficient antecedent basis for this limitation in the claim.

Claim 24 recites the limitation "the destination element" in line 3 of claim 24. There is insufficient antecedent basis for this limitation in the claim.

Claim 41 recites the limitation "the identifier" in lines 2-3 of claim 41. There is insufficient antecedent basis for this limitation in the claim.

Claim 41 recites the limitation "the destination element" in line 3 of claim 41. There is insufficient antecedent basis for this limitation in the claim.

Claim 44 recites the limitation "the line card" in line 1 of claim 44. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Objections*

3. Claim 36 is objected to because of the following informalities: in the last line of claim 36, the “and” should be omitted. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 5, 7, and 11-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sonderegger et al. (US Patent No. 5,796,504).

Regarding claim 1, Sonderegger teaches an optical communication device, comprising: an integrated circuit operable to generate a plurality of optical signal wavelengths (fig. 2, signal wavelengths 37), the integrated circuit comprising: a plurality of light sources (fig. 2, lasers 24), each light source operable to generate at a specified wavelength an unmodulated optical signal (fig. 2, wavelengths $\lambda_1$-$\lambda_n$); and a plurality of modulators (fig. 2, modulators 36, and see also col. 2, line 14), each modulator coupled to at least one of the plurality of light sources (fig. 2, lasers 24 and modulators 26 are coupled through splitters 30 and fibers 26 and 32) and operable to modulate information onto the unmodulated optical signal based at least in part on an electronic signal to form a plurality of modulated optical output wavelength signals (fig. 2, sensor 35 provides the electrical signal, and col. 2, lines 7-9).

Regarding claim 2, Sonderegger teaches controllers operable to generate the electronic signal used to modulate the unmodulated optical signal (fig. 2, sensors 35 generate electric signal, and see also col. 3, line 54).

Regarding claim 5, Sonderegger teaches that receivers are coupled to the controller (fig. 2, the sensor/controller 35 is coupled to the receivers 50).

Regarding claim 7, Sonderegger teaches that the communication device comprises an optical signal separator (fig. 2, signal separator 46) operable to receive a multiple wavelength optical input signal and to separate that signal into a plurality of optical input wavelength signals (fig. 2, the signal separator 46 receives the multiple wavelength signal and separates that signal into a plurality of wavelength signals $\lambda_1$, $\lambda_2$, and $\lambda_n$).

Regarding claim 11, Sonderegger teaches that the separator is a wavelength division demultiplexer (col. 4, line 54).

Regarding claim 12, Sonderegger teaches that at least some of the plurality of optical output wavelength signals comprises a different center wavelength (fig. 2, $\lambda_1$, $\lambda_2$, and $\lambda_n$).

Regarding claim 13, Sonderegger teaches that at least some of the plurality of light sources are fixed wavelength lasers (fig. 2, $Laser_1$, $Laser_2$, and $Laser_n$ each emit a different fixed wavelength $\lambda_1$, $\lambda_2$ and $\lambda_n$).

Regarding claim 14, Sonderegger teaches that at least some of the plurality of light sources consist of laser diodes (col. 5, line 5).

Regarding claim 15, Sonderegger teaches a combiner operable to receive each of the modulated optical output wavelength signals and to generate a multiple output optical signal (fig. 2, WDMs 38).

Regarding claim 16, Sonderegger teaches that the combiner is a wavelength division multiplexer (fig. 2, WDMs 38).

Regarding claim 17, Sonderegger teaches that the system comprises a router (fig. 2, this system can be considered a router in that it routes each wavelength signal to its respective destination, or, see col. 8, line 24: the system has routing capabilities in each acoustic sensor, and therefore achieves the function of a router).

6. Claims 1-3, 5, 7-9, 11-12, 15-19, 21, 23-25, 27-28, 30-33, 35-38, 40-42, and 44-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Koren at al. (US Patent No. 6,826,368).

Regarding claim 1, Koren teaches an optical communication device, comprising: an integrated circuit operable to generate a plurality of optical signal wavelengths (fig. 1, $\lambda_1$, $\lambda_2$, $\lambda_N$), the integrated circuit comprising: a plurality of light sources, each light source operable to generate at a specified wavelength an unmodulated optical signal (col. 3, lines 11-13: each light source generates a specified unmodulated wavelength $\lambda_1$, $\lambda_2$, and $\lambda_N$); and a plurality of modulators (fig. 1, $M_1$, $M_2$, $M_N$), each modulator coupled to at least one of the plurality of light sources and operable to modulate information onto the unmodulated optical signal based at least in part on an electronic signal to form a plurality of modulated optical output wavelength signals (col. 3, lines 11-13: since the unmodulated signal is modulated with the electrical signal, the light source must be coupled to the modulator).

Regarding claim 2, Koren teaches a controller (fig. 1, Optical to Electrical Conversion 103) operable to generate the electronic signal used to modulate the unmodulated signal (fig. 1, Optical to Electrical Conversion 103 generates the electronic signal by converting the incoming optical signals into electronic signals).

Regarding claim 3, Koren teaches that the controller is operable to receive a plurality of input wavelength signals (from Interfaces 1, 2, and 3) and to convert the plurality of input wavelength signals to a plurality of electronic signals for use in modulating the unmodulated optical signals (fig. 1, Optical to Electrical Conversion 103).

Regarding claim 5, Koren teaches that a receiver is coupled to the controller (fig. 1, if router 101 is considered the receiver, since it receives the plurality of wavelengths, then the "receiver" is coupled to the controller/Optical to Electrical Conversion 103).

Regarding claim 7, Koren teaches an optical signal separator (fig. 1, Splitter 204) operable to receive a multiple wavelength optical input signal (from OA 206) and to separate that signal into a plurality of optical input wavelength signals ($\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 8, Koren teaches that at least one of the plurality of optical input signal wavelengths comprises a packet comprising the identifier associated with the destination element external to the optical processing device (col. 3, lines 5-7).

Regarding claim 9, Koren teaches that the packet comprises an Internet Protocol (fig. 5).

Regarding claim 11, Koren teaches that the separator is a device consisting of a wavelength division demultiplexer (col. 3, line 32).

Regarding claim 12, Koren teaches that at least some of the optical output wavelength signals comprise a different center wavelength (fig. 1, $\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 15, Koren teaches a combiner operable to receive each of the modulated optical output wavelength signals and to generate a multiple wavelength output optical signal (fig. 1, combiner 104 receives $\lambda_1$, $\lambda_2$, and $\lambda_N$ and generates an optical signal).

Regarding claim 16, Koren teaches that the combiner comprises a wavelength division multiplexer (fig. 1, WDM Multiplexer 102).

Regarding claim 17, Koren teaches that the optical communication device comprises a router (fig. 1, Routers 101 and 201).

Regarding claim 18, Koren teaches an optical communication device comprising: a plurality of integrated circuits operable to receive at least some of a plurality of optical signal wavelengths (fig. 1, router 101 and router 201 receive optical signal wavelengths), each of the plurality of integrated circuits comprising: one or more controllers operable to convert at least a portion of each optical signal wavelength received by the integrated circuit to an electronic signal (fig. 1, Optical to Electrical Conversion 103); and a plurality of optical transmitters (fig. 1, $M_1$, $M_2$, and $M_N$ are considered transmitters in that they generate and transmit an optical output wavelength), each optical transmitter operable to generate an optical output wavelength signal based at least in part on the electronic signal received from the one or more controllers (col. 3, lines 11-14).

Regarding claim 19, Koren teaches that the controller (fig. 1, Optical to Electrical Conversion 103) is operable to receive a plurality of input wavelength signals (fig. 1, the controller 103 receives a plurality of input wavelength signals from interface 1, 2, and 3) and to convert the plurality of input wavelength signals to a plurality of electronic signals (fig. 1, Optical to Electrical Conversion 103) for use in modulating the optical output wavelength signals (fig. 1, the electronic signals are modulated at $M_1$, $M_2$, and $M_N$).

Regarding claim 21, Koren teaches that a receiver is coupled to the controller (fig. 1, if router 101 is considered the receiver, since it receives the plurality of wavelengths, then the "receiver" is coupled to the controller/Optical to Electrical Conversion 103).

Regarding claim 23, Koren teaches an optical signal separator (fig. 1, Splitter 204) operable to receive a multiple wavelength optical signal and to separate that signal into a plurality of optical input wavelength signals ($\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 24, Koren teaches that at least one of the plurality of optical input signal wavelengths comprises a packet comprising the identifier associated with the destination element external to the optical processing device (col. 3, lines 5-7).

Regarding claim 25, Koren teaches that the packet comprises an Internet Protocol (fig. 5).

Regarding claim 27, Koren teaches that the separator is a device consisting of a wavelength division demultiplexer (col. 3, line 32).

Regarding claim 28, Koren teaches that at least some of the optical output wavelength signals comprise a different center wavelength (fig. 1, $\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 30, Koren teaches that the controller generates communication instructions for each optical wavelength signal based at least in part on a destination identifier associated with the electronic signal (col. 3, lines 43-45 and lines 47-55).

Regarding claim 31, Koren teaches that the portion of the optical wavelength signal converted to the electronic signal comprises a destination identifier (col. 3, lines 47-50: the routing information include the location and network addresses).

Regarding claim 32, Koren teaches that the plurality of optical transmitters comprise a light source operable to generate at a specified wavelength an unmodulated optical signal (col. 3, lines 11-13: there consists an optical source MI that generates a specified wavelength $\lambda_1$, which is initially unmodulated); and a modulator coupled to the light source operable to modulate information onto the unmodulated optical signal based at least in part on the electronic signal to form a plurality of modulated optical output wavelength signals (col. 3, lines 10-13, and fig. 1, $M_1$, $M_2$, and $M_N$).

Regarding claim 33, Koren teaches that the light source is a fixed wavelength laser (each light source emits a fixed wavelength of either $\lambda_1$, $\lambda_2$, or $\lambda_N$).

Regarding claim 35, Koren teaches a combiner operable to receive each of the optical output wavelength signals and to generate a multiple wavelength output optical signal (fig. 1, combiner 104 receives $\lambda_1$, $\lambda_2$, and $\lambda_N$ and generates an optical signal).

Regarding claim 36, Koren teaches an integrated circuit operable to receive a plurality of input optical signal wavelengths (fig. 1, $\lambda_1$, $\lambda_2$, and $\lambda_N$) and to generate a plurality of output optical signal wavelengths (fig. 1, output optical signal wavelengths are generated at Electrical to Optical Conversion 203), the integrated circuit comprising;

one or more receivers operable to convert one of the input optical signal wavelengths to an electronic format (fig. 1, Optical to Electrical Conversion 103); a plurality of light sources (col. 3, lines 11-13: each $M_1$, $M_2$, and $M_N$ has its own light source), each light source operable to generate at a specified wavelength an unmodulated optical signal (each light source generates a specified unmodulated wavelength $\lambda_1$, $\lambda_2$, and $\lambda_N$); and a plurality of modulators (fig. 1, $M_1$, $M_2$, and $M_N$), each modulator coupled to at least one of the plurality of light sources (col. 3, lines 11-13: since the unmodulated signal is modulated with the electrical signal, the light source must be coupled to the modulator) and operable to modulate information onto the unmodulated optical signal based at least in part on the electronic format (col. 3, lines 11-13: the unmodulated signal is modulated with the electrical signal).

Regarding claim 37, Korean teaches that the receiver (fig. 1, Optical to Electrical Conversion 103) is operable to communicate the electronic format to one or more controllers (fig. 1, the controller is considered to be part of the receiver – Optical to Electrical Conversion 103).

Regarding claim 38, Koren teaches that the controller converts the electronic format to an electronic signal for use in modulating the unmodulated optical signal (col. 3, line 10).

Regarding claim 40, Koren teaches an optical signal separator (fig. 1, Splitter 204) operable to receive a multiple wavelength optical input signal (fig. 1, the signal exiting OA 206) and to separate that signal into the plurality of optical input wavelength signals (fig. 1, $\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 41, Koren teaches that at least one of the plurality of optical input signal wavelengths comprises a packet comprising the identifier associated with the destination element external to the optical processing device (col. 3, lines 5-7).

Regarding claim 42, Koren teaches that at least some of the optical output wavelength signals comprise a different center wavelength (fig. 1, $\lambda_1$, $\lambda_2$, and $\lambda_N$).

Regarding claim 44, as understood in regards to the 112 rejection above, Koren teaches a line card which comprises a controller operable (fig. 1, Optical to Electrical Conversion 103) to convert at least a portion of each optical input wavelength to an electronic signal (col. 3, line 10).

Regarding claim 45, Koren teaches that the portion of the optical wavelength signal converted to the electronic signal comprises a destination identifier (col. 3, lines 47-50: the routing information include the location and network addresses).

Regarding claim 46, Koren teaches that the controller generates communication instructions for each optical wavelength signal based at least in part on a destination identifier associated with the electronic signal (col. 3, lines 43-45 and lines 47-55).

Regarding claim 47, Koren teaches a look-up table operable to facilitate generation of at least a first control signal based at least in part on an identifier (fig. 5, and see also col. 5, lines 39-42).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4, 20, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koren in view of Dakin (US Patent No. 4,941,747).

Regarding claims 4, 20, and 39, Koren teaches all the limitations as applied in claims 1, 2, 18, 36, and 37 except for the limitation that the controller, the light sources, the modulators, and the transmitters reside on a semiconductor substrate. Dakin teaches having modulation elements residing on a semiconductor substrate (col. 4, lines 20-25). One of ordinary skill in the art would have been motivated to place the controller, light sources, the modulators, and the transmitters on a semiconductor substrate to enable cost savings and enabling mass production (col. 4, lines 23-25), and also for better integration capabilities. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to place the controller, the light sources, the modulators, and the transmitters of Koren onto a semiconductor substrate as indicated by Dakin.

9. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koren.

Regarding claims 6 and 22, Koren teaches all the limitations as applied in claims 1, 2, 5, 18, and 21 above, except for the limitation that the receivers are operable to convert the optical signal wavelengths to an electronic format for communication to the controllers. Although Koren does not expressly disclose that the receiver (fig. 1, router

101) does the optical to electrical conversion, Koren does disclose that the controller (fig. 1, Optical to Electrical Conversion) performs the conversion. Whether or not the receiver or the controller performs the conversion, it is recognized that the claimed difference exists not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedients known to the artisan of ordinary skill as design choices.

10. Claims 10 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koren in view of O'Connor (US Patent No. 6,356,544 B1).

Regarding claims 10 and 26, Koren teaches all the limitations as applied to claims 1, 7, 8, 18, 23, and 24 above except for the limitation that the packet comprises a Multi-Protocol Label Switching (MPLS) packet. O'Connor teaches a system having MPLS packets (col. 4, line 31). One of ordinary skill in the art would have been motivated to use MPLS packets because it provides enhanced switching capabilities and quicker switching times (col. 1, line 54), and it also provides the ability to offer different grades of network service (col. 1, line 67) and the ability to create virtual private networks through the stacking of labels (col. 2, lines 1-2), and also, switched paths can be merged to form multipoint-to-point trees (col. 4, lines 32-34). Therefore it would have been obvious to have MPLS packets as indicated by O'Connor in the system of Koren.

11. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koren in view of Chang et al. (US Patent No. 6,525,850 B1).

Regarding claim 29, Koren teaches all the limitations as applied to claim 18 above except for the limitation that the controller converts at least a header and a payload portion associated with each optical wavelength signal to the electronic signal. Chang teaches a controller that converts a header and a payload portion of an optical wavelength signal to an electronic signal (col. 18, lines 21-23). One of ordinary skill in the art would have been motivated to convert the header and payload of an optical signal to an electrical signal to maintain consistency in conversions and to provide simplicity in operation. Therefore, if not inherent, it would have been obvious to convert the header and the payload portions of an optical signal to an electrical signal as indicated by Chang.

12. Claims 34 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koren in view of Krause et al. (US Patent No. 5,886,313).

Regarding claims 34 and 43, Koren teaches all the limitations as applied to claims 18, 32, and 36 above except for the limitation that the light source is a laser. Jurca teaches a system comprising laser diodes (col. 6, lines 50-51). One of ordinary skill in the art would have been motivated to use laser diodes as light sources because they have long lifetimes and require virtually no maintenance (col. 6, lines 50-55) . Therefore, it would have been obvious to one of ordinary skill in the art to use the laser diodes of Jurca as light sources in the system of Koren.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJL

M. R. Sedighian

**M. R. SEDIGHIAN**
**PRIMARY EXAMINER**